APPARATUS AND METHODS OF TESTING AND ASSEMBLING BUMPED DEVICESUSING AN ANISOTROPICALLY CONDUCTIVE LAYER

ABSTRACT OF THE DISCLOSURE

The present invention is directed toward apparatus and methods of testing and assembling bumped die and bumped devices using an anisotropically conductive layer. In one embodiment, a semiconductor device comprises a bumped device having a plurality of conductive bumps formed thereon, a substrate having a plurality of contact pads distributed thereon and approximately aligned with the plurality of conductive bumps, and an anisotropically conductive layer disposed between and mechanically coupled to the bumped device and to the substrate. The anisotropically conductive layer electrically couples each of the conductive bumps with a corresponding one of the contact pads. In another embodiment, an apparatus for testing a bumped device having a plurality of conductive bumps includes a substrate having a plurality of contact pads distributed thereon and substantially alignable with the plurality of conductive bumps, and an anisotropically conductive layer disposed on the first surface and engageable with the plurality of conductive bumps to electrically couple each of the conductive bumps with a corresponding one of the contact pads. Alternately, the test apparatus may also include an alignment device or a bumped device handler. In another embodiment, a method of testing a bumped device includes engaging a plurality of contact pads with an anisotropically conductive layer, engaging the plurality of conductive bumps with the anisotropically conductive layer substantially opposite from and in approximate alignment with the plurality of contact pads, forming a plurality of conductive paths through the anisotropically conductive layer so that each of the conductive bumps is electrically coupled to one of the contact pads, and applying test signals through at least some of the contact pads and the conductive paths to at least some of the conductive bumps.